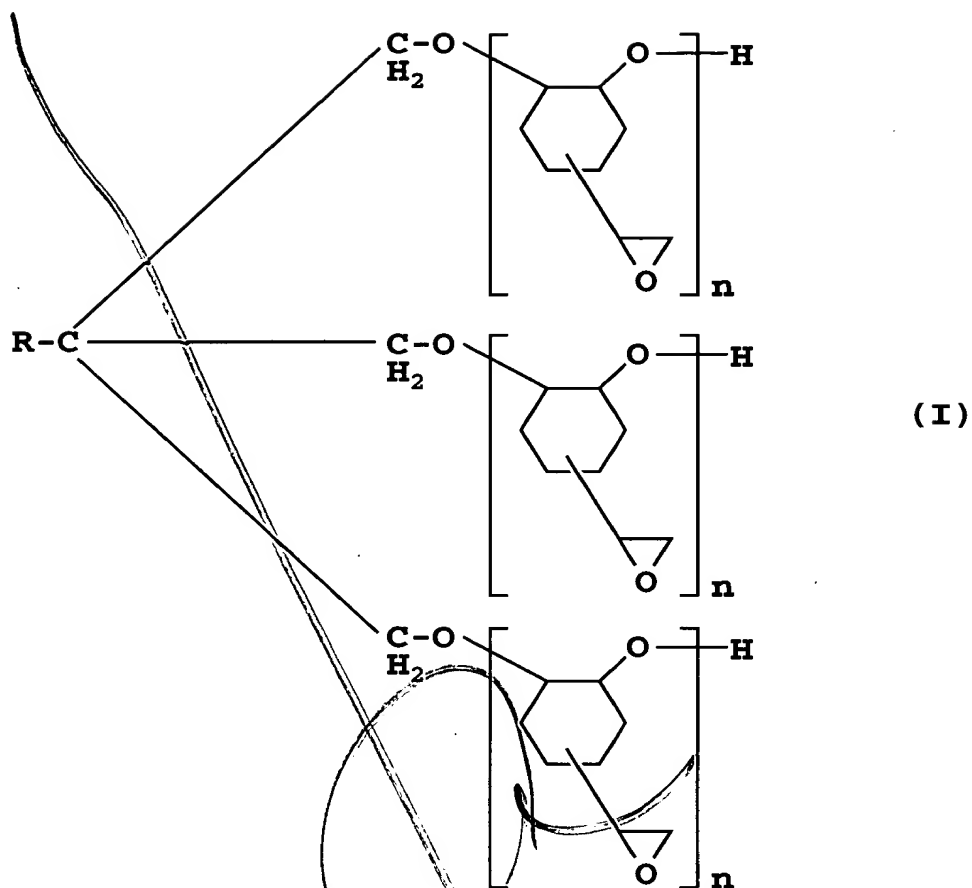


WHAT IS CLAIMED IS:

- add  
a1
1. An optical waveguide comprising a core or a  
cladding which is a film of a polymer obtained by  
5 ultraviolet curing a photosensitive substance,  
wherein the photosensitive substance comprises a  
mixture of two or more of reactive oligomers and a  
photopolymerization initiator, the reactive  
oligomers each contains at least one epoxy ring, at  
10 least one of the reactive oligomers in the mixture  
contains an aromatic ring, the refractive index of  
the polymer can be controlled by changing the  
content of the at least one reactive oligomer, and  
the photosensitive substance has a viscosity  
15 adjusted to 500 cps to 10,000 cps.
2. The optical waveguide as claimed in claim 1,  
wherein one of the reactive oligomers constituting  
the photosensitive substance is expressed by the  
20 following general formula (I)

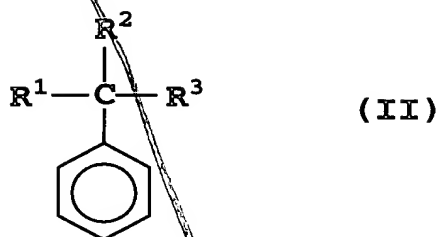


where R is C<sub>m</sub>X<sub>2m+1</sub>, where m is a natural number, and X is a hydrogen atom, a heavy hydrogen atom, or a halogen group, and n is a natural number,

5 and the viscosity of the photosensitive substance can be adjusted by changing the content of the one reactive oligomer.

3. The optical waveguide as claimed in claim 1,  
10 wherein the at least one reactive oligomer constituting the photosensitive substance contains

the aromatic ring of the following general formula  
(II)



5        where  $R^1$ ,  $R^2$  and  $R^3$  are  $C_mX_{2m+1}$  or  $C_6X_{5-n}Y_n$ , where  
m and n are each a natural number, and X and Y are a  
hydrogen atom, a heavy hydrogen atom, or a halogen  
group, and  $R^1$ ,  $R^2$  and  $R^3$  each have at least one epoxy  
ring, and the refractive index of the polymer has  
10       been controlled by changing the content of the at  
least one reactive oligomer.

4.    A method for producing an optical waveguide,  
comprising:

15       forming an under cladding layer from a film of a  
polymer prepared by irradiating a photosensitive  
substance with light, said photosensitive substance  
being the photosensitive substance described in  
claim 1, or a photosensitive substance containing  
20       the reactive oligomer of the general formula (I), or  
a photosensitive substance containing the reactive  
oligomer of the general formula (II);

the forming on the under cladding layer a layer of the photosensitive substance described in claim 1, or a photosensitive substance containing the reactive oligomer of the general formula (I), or a  
5 photosensitive substance containing the reactive oligomer of the general formula (II), each photosensitive substance being to have a refractive index adjusted to become higher than that of the under cladding layer when polymerized by irradiation  
10. with light;

irradiating the layer of the photosensitive substance with condensed light through a mask, or directly, to form a latent image in a pattern form, followed by removing non-irradiated areas with a  
15 solvent to form a pattern for use as a core portion for passage of light; and

then coating the core portion, and an upper portion in the surroundings thereof, with the photosensitive substance described in claim 1, or a  
20 photosensitive substance containing the reactive oligomer of the general formula (I), or a photosensitive substance containing the reactive oligomer of the general formula (II), each photosensitive substance being to have a refractive  
25 index adjusted to become lower than that of the core portion when polymerized, and polymerizing the

coated photosensitive substance by irradiation with  
ultraviolet light to form an upper cladding layer.

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